

FACT SHEET

The United States Environmental Protection Agency (EPA), Region 10
Proposes to Reissue A
National Pollutant Discharge Elimination System (NPDES) permit to:

The City of Cordova
Wastewater Treatment Plant
602 Railroad Avenue
Cordova, Alaska 99574

Permit No.: AK-002154-7

Public Notice start date: September 12, 2001

Public Notice expiration date: October 16, 2001

EPA Proposes NPDES Permit Reissuance.

EPA proposes to reissue an NPDES permit to the City of Cordova Wastewater Treatment Plant. In order to ensure protection of water quality and human health, the permit places limits on the types and amounts of pollutants that can be discharged from the wastewater treatment plant to Orca Inlet.

This Fact Sheet includes:

- information on public comment, public hearing and appeal procedures,
- a description of the current discharge and sewage solids ("biosolids") practices,
- a listing of proposed effluent limitations and other conditions,
- a map and description of the discharge location and
- detailed technical material supporting the conditions in the permit.

Public Comment.

Persons wishing to comment on or request a Public Hearing for the draft permit may do so in writing by the expiration date of the Public Notice. A request for a Public Hearing must state the nature of the issues to be raised as well as the requester's name, address and telephone number. All comments and requests for Public Hearings must be in writing and should be submitted to EPA as described in the Public Comments section of the attached Public Notice.

After the Public Notice expires and all comments have been considered, EPA's regional Director for the Office of Water will make a final determination regarding permit reissuance.

Persons wishing to comment on the State Certification should submit comments by the Public Notice expiration date to the Alaska Department of Environmental Conservation, Fairbanks Office, 610 University Avenue, Fairbanks, Alaska 99709. A copy of these comments should also be sent to EPA (see below).

If no substantive comments are received, the tentative conditions in the draft permit will become final and the permit will become effective upon issuance. If comments are received, EPA will address the comments and issue the permit. The permit will become effective 30 days after the issuance date unless a request for an evidentiary hearing is submitted within 30 days.

Documents are Available for Review.

The draft NPDES permit and related documents can be reviewed or obtained by visiting or contacting EPA's regional office in Seattle, Washington between 8:30 a.m. and 4:00 p.m., Monday through Friday (see address below). Draft permits, Fact Sheets and other information can also be found by visiting EPA Region 10's website at www.epa.gov/r10earth/water/npdes.htm.

United States Environmental Protection Agency
Region 10
1200 Sixth Avenue, OW - 130
Seattle, Washington 98101
(206) 553-2108 or 1-800-424-4372 ext 2108 (within Alaska, Idaho, Oregon and Washington).

The Fact Sheet and draft permit are also available at:

EPA Alaska Operations Office, Room 537
Federal Building, 222 W. 7th Avenue, #19
Anchorage, Alaska 99513

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I. APPLICANT

A. Applicant

Facility Name: City of Cordova Wastewater Treatment Plant (WWTP)

NPDES Permit Number: AK-002154-7

Facility Location Address: 602 Railroad Avenue
Cordova, Alaska 99574

Facility Mailing Address: P.O. Box 1210
Cordova, Alaska 99574

Facility Contact: Larry Hancock, Public Works Director

Contact Phone Number: (907) 424-6200

II. FACILITY INFORMATION

A. Facility Description

The city of Cordova is located on the southeast area of Orca Inlet in southcentral Alaska. The city owns and operates a municipal wastewater treatment plant (Standard Industrial Code 4952) that provides secondary treatment of wastewater prior to discharge into Orca Inlet. A map of the location of the facility is included in Appendix A.

The wastewater treatment plant is part of a sanitary sewer system that receives domestic wastewater from residential and commercial sources; there are no significant industrial sources. The facility is an aerated activated sludge package plant which consists of a grit chamber, aeration tanks, clarifier, sludge digester and chlorine contact basin. The plant was installed in 1974 and currently serves a population of approximately 2,600¹. The facility's design criteria are as follows:

Design flow: 0.7 million gallons per day (mgd)
Average BOD₅ load: 700 lbs/day
Average SS load: 800 lbs/day

For 1998, 1999 and 2000, the annual average daily flow rates have been 0.640, 0.646 and 0.581 mgd, respectively. A diagram of the treatment process is included in Appendix A.

¹ NPDES Permit Application, city of Cordova, December 19, 2000.

Presently, the permittee disposes of approximately 22 dry metric tons of biosolids per year at a surface disposal site located about fifteen miles southeast of the city of Cordova on Sheridan Glacier Road. The facility is owned by the state of Alaska and is currently operating under a state sludge permit (#8524-BA002). See Part VI.C. for further details.

B. Background Information

1. Permit History

The following table summarizes the history of the NPDES permit for the city's wastewater treatment plant.

Date	Action
October 24, 1974	Initial permit issuance - contained primary treatment requirements. Expiration date: November 30, 1976.
May 12, 1977	Permit reissued. Permit contained compliance schedule requiring correction of infiltration/inflow problems. Permit also contained construction schedule to achieve secondary treatment by July 1, 1977 for all treated wastewater. Expiration date: February 28, 1982.
July 21, 1983	Permit reissued. Expiration date: July 20, 1988
June 6, 1988	Application received for permit re-issuance.
January 29, 1990	Permit reissued. Expiration date: January 30, 1995.
August 3, 1994	Application received for permit re-issuance.
January 23, 1996	Permit reissued. Permit contained requirements for toxicity testing, mixing zone monitoring, sewage sludge (biosolids) management and a quality assurance plan. Expiration date: January 23, 2001.
December 22, 2000	Application received for permit re-issuance.

2. Compliance History

In the past, the city has experienced problems with infiltration and inflow (I&I). The city has attempted to correct the problems by modifying the sewer use ordinance to promote the disconnection of roof drains from the sanitary sewer system. In 1993, the city completed a major I&I rehabilitation project which, according to the city, eliminated most of the I&I problem and brought the WWTP well within its permit

parameters. The city continued to investigate roof and floor drain connections. In 1995, the city sealed all surface manhole covers.

EPA issued a Compliance Order (Docket No. 10-98-002-CWA/A) on August 12, 1998 (amended December 2, 1998) to the city of Cordova for violations of its NPDES permit. The order specified that:

- 1) The city exceeded the effluent limits for total chlorine residual twenty times between February 1996 and December 1997.
- 2) The city did not submit a Toxicity Reduction Evaluation workplan within 90 days of the effective date of the permit.
- 3) The city had not submitted an approvable Quality Assurance Plan within 180 days of the effective date of the permit.
- 4) The facility reported 26 bypasses between 1996 and 1998.
- 5) Between March 1996 and September 1998, the city exceeded the fecal coliform daily maximum limit of 10,000 organisms per 100 milliliters eleven times.

The amended order specified the following requirements in order to meet the conditions in the permit:

- 1) the city shall retain appropriate equipment to measure chlorine residual at the method detection limit specified in the permit.
- 2) the city shall use the method detection limit of 0.01 mg/l when reporting chlorine residual values.
- 3) by March 1, 1999, the city shall submit for review and approved by EPA a schedule of events from the Corrective Action Plan that was initiated under the August 1998 Administrative Order.
- 4) by March 1, 1999, the city shall submit the Toxicity Reduction Evaluation workplan required by Part II.B.9 of the permit.
- 5) by March 1, 1999, the city shall submit a Quality Assurance Plan approvable under Part III.B. of the permit.
- 6) until the current permit is modified or reissued, the maximum limitation for fecal coliform shall be 50,000 organisms per 100 ml.
- 7) beginning April 1, 1999 and continuing until the city's current permit is modified or reissued, the city shall monitor the receiving waters for fecal coliform at the boundaries of the mixing zone.

The city submitted a Toxicity Reduction Evaluation (TRE) workplan and Quality Assurance Plan in April 1999. In July 1999, the city submitted a report on a wastewater treatment plant upgrade study (dated June 30, 1999). The objective of the study was to evaluate options for upgrading the existing wastewater treatment plant to

handle bypass events and to provide the city with adequate wastewater treatment for the next 10 years.

A summary of the plant performance for the past three years based on a review of the Discharge Monitoring Reports (DMRs)² is provided in Table 1.

TABLE 1. SUMMARY OF PLANT PERFORMANCE (1998-2001)			
Parameter	Units	Plant Performance	# Reported Violations
Flow	mgd	0.368 - 0.938	11
Average Monthly Effluent BOD ₅	mg/L	5 - 21	0*
	lbs/day	30 - 106	1*
% Removal, BOD ₅	percent	82 - 95	1
Average Monthly Effluent TSS	mg/L	3 - 19	0
	lb/day	17 - 103	0**
% Removal, TSS	percent	87 - 96	0
Average Monthly Fecal Coliform Bacteria	colonies/100 ml	1,880 - 76,300	4***
pH	s.u.	6.0 - 7.4	0
* One violation of daily maximum limit. **One violation of weekly limit. *** Effluent limit amended in December 1998 Administrative Order to 50,000 colonies/100 ml.			

III. RECEIVING WATER

A. Outfall Location and Description

The City of Cordova WWTP effluent discharges to Orca Inlet through outfall 001, located at latitude 60°32'19" N and longitude 145°46'56" W. The outfall is fourteen inches in diameter and consists of six diffusers. It extends approximately 800 feet from the shore and terminates at a depth of 12 feet below mean low water³.

² Discharge monitoring reports are forms that the facility uses to report the results of monitoring specified in the NPDES Permit.

³ NPDES Permit Application, city of Cordova, December 19, 2000.

B. Water Quality Standards

The State's water quality standards are composed of use classifications, numeric and/or narrative water quality criteria, and an anti-degradation policy. The use classification system designates the beneficial uses that each water body is expected to achieve (such as cold water biota, contact recreation, etc.). The numeric and/or narrative water quality criteria are the criteria deemed necessary by the State to support the beneficial use classification of each water body. The anti-degradation policy represents a three tiered approach to maintain and protect various levels of water quality and uses.

The Alaska *Water Quality Standards* (18 AAC 70.020) protect Orca Inlet for the following beneficial use classifications:

- Water supply for aquaculture, seafood processing and industry;
- Contact and secondary water recreation;
- Growth and propagation of fish, shellfish, other aquatic life and wildlife; and
- Harvesting for consumption of raw mollusks or other raw aquatic life.

The State's anti-degradation policy is summarized in Appendix B.

IV. PROPOSED EFFLUENT LIMITATIONS

A. Basis for Permit Effluent Limits

Sections 101, 301(b), 304, 308, 401, 402 and 405 of the Clean Water Act provide the basis for the effluent limitations and other conditions in the draft permit. The EPA evaluates discharges with respect to these sections of the Clean Water Act and the relevant NPDES regulations in determining which conditions to include in the permit.

In general, EPA first determines which technology-based limits are required to be incorporated into the permit (40 CFR Part 122.44[a]), as well as best management practices or other requirements. Technology-based limits for municipal facilities are derived from secondary treatment standards (40 CFR Part 133.102) and based on end-of-pipe technology. The Clean Water Act also requires NPDES permitted discharges to demonstrate compliance with state water quality standards.

Water quality-based limits are derived from state water quality standards to protect the water quality of state waters. Therefore, the effluent limitations are developed from technology available to treat the pollutants (technology-based limits) and limits that are protective of the designated uses of the receiving water (water quality-based limits). The proposed permit will reflect whichever limits (technology-based or water quality-based) are more stringent.

B. Proposed Effluent Limitations

Table 2 and the following list summarize the proposed effluent limitations in the draft permit. For comparison purposes, the table also shows the effluent limitations of the current permit.

TABLE 2. CURRENT AND PROPOSED EFFLUENT LIMITATIONS FOR OUTFALL 001									
Parameter	Units	Monthly Average		Weekly Average		Maximum Daily		Minimum Daily	
		Current (1996)	Draft (2001)	Current (1996)	Draft (2001)	Current (1996)	Draft (2001)	Current (1996)	Draft (2001)
Flow	mgd	0.7	---	---	---	---	---	---	---
Biochemical Oxygen Demand (BOD ₅)	mg/L	30	30	45	45	60	60	---	--
	lb/day	105	175	158	263	210	350	---	---
	% removal ¹	85	85	---	---	---	---	---	---
Total Suspended Solids (TSS)	mg/L	30	30	45	45	60	60	---	---
	lb/day	120	175	180	263	240	350	---	---
	% removal ¹	85	85	---	---	---	---	---	---
pH	s.u.	—	---	—	---	8.5	9.0	6.0	6.0
Fecal Coliform Bacteria	#/100 ml	---	---	---	---	10,000	10,000	---	---
Total Residual Chlorine	mg/L	---	---	---	---	0.002	0.2	---	---
Dissolved Oxygen (DO)	mg/L	---	---	---	---	---	---	---	2.0
¹ For BOD ₅ and TSS, the monthly average effluent concentration must not exceed 15 percent of the monthly average influent concentration.									

1. During the effective period of this permit, the permittee is authorized to discharge from outfall 001, subject to the restrictions set forth herein. This permit does not authorize the discharge of any waste streams, including spills and other unintentional or non-routine discharges of pollutants, that are not part of the normal operation of the facility as disclosed in the permit application, or any pollutants that are not ordinarily present in such waste streams.
2. There must be no discharge of floating, suspended, or submerged matter of any kind in concentrations causing nuisance or objectionable conditions or that may impair designated beneficial uses.

3. The discharge of chemicals in toxic amounts is prohibited pursuant to Section 101(a)(3) of the CWA and the Alaska water quality standards (18 AAC 70.020), which prohibits the discharge of toxic pollutants in toxic amounts.

V. MONITORING REQUIREMENTS

A. Summary of Effluent Monitoring Requirements in Draft NPDES Permit

Section 308 of the Clean Water Act and federal regulation 40 CFR Part 122.44(i) requires that monitoring be included in permits to determine compliance with effluent limitations. Additionally, monitoring may be required to gather data for future effluent limitations or to monitor effluent impacts on receiving water quality. Monitoring frequencies are based on the nature and effect of the pollutant, as well as a determination of the minimum sampling necessary to adequately monitor the facility's performance. The permittee is responsible for conducting the monitoring and for reporting results with Discharge Monitoring Reports (DMRs) to EPA.

Table 3 presents the effluent monitoring requirements in the draft permit. For comparison purposes, the table also includes the monitoring requirements of the current permit.

TABLE 3: EFFLUENT MONITORING FREQUENCY REQUIREMENTS		
Parameter	Current Permit (1996)	Draft Permit (2001)
Flow	continuous	daily
BOD ₅	weekly	weekly
TSS	weekly	weekly
pH	daily	daily
Temperature	---	daily
Fecal Coliform Bacteria	weekly	weekly
Total Residual Chlorine (TRC)	daily	daily
DO	---	daily
Total Ammonia as N	---	monthly
Chronic Toxicity (TU _c)	quarterly	---

B. Summary of Receiving Water Monitoring Requirements in Draft NPDES Permit

Preliminary comments from the State (dated August 31, 2001) also require the Permittee to monitor fecal coliform bacteria at the edge of the mixing zone. The mixing zone represents an area 3,200 meters by 200 meters centered around the diffuser. The area extends from the marine bottom to the surface of the water and is oriented with the tidal flow (ie. the axis formed by 29 degrees NNE and 209 degrees SSW).

The draft permit proposes monitoring of the receiving water for total ammonia, temperature, pH and salinity to assist in future evaluation of effluent limits for total ammonia.

Table 4 presents the receiving water monitoring requirements in the draft permit.

TABLE 4. RECEIVING WATER MONITORING REQUIREMENTS			
Effluent Parameter	Units	Sample Frequency	Sample Type
Fecal Coliform Bacteria	#/100 ml	*	grab
Total Ammonia as N	mg/l	*	grab
Temperature	°C	*	grab
pH	s.u.	*	grab
salinity	ppt ¹	*	grab
* 1 time/month during May, June, July and August. Once during September to December and once during January to April. ¹ parts per thousand			

VI. SPECIAL CONDITIONS

A. Quality Assurance Plan (QAP). Under 40 CFR Part 122.41(e), the permittee is required to ensure adequate laboratory controls and appropriate quality assurance procedures in order to properly operate and maintain all facilities which it uses. Therefore, this permit requires the permittee to review, and if necessary, update its quality assurance plan within 60 days of the effective date of the permit. The Quality Assurance Plan must consist of standard operating procedures the permittee must follow for collecting, handling, storing and shipping samples, laboratory analysis, and data reporting.

B. Best Management Practices (BMPs)

Section 402 of the Clean Water Act and federal regulation 40 CFR Part 122.44(k) authorize EPA to require best management practices (BMPs) in NPDES permits. BMPs are measures for controlling the generation of pollutants and their release to waterways. For municipal facilities, these measures are typically included in the facility Operation &

Maintenance (O&M) plans. These measures are important tools for waste minimization and pollution prevention.

The draft permit requires that the permittee develop a plan and implement BMPs within 180 days of permit issuance. EPA has a guidance manual (EPA, 1993) that may provide some assistance in the development of BMPs. Specifically, the permittee must consider spill prevention and control, optimization of chemical use, public education aimed at controlling the introduction of household hazardous materials to the sewer system and water conservation. Furthermore, it is considered a good management practice to maintain a log of daily plant operations and observations. To the extent that any of these issues have already been addressed, the permittee need only reference the appropriate document/section in its O&M. The BMP plan must be revised as new practices are developed for the facility.

C. Sewage Sludge

Section 405 of the Clean Water Act requires NPDES permits to include sewage sludge use and disposal standards unless these requirements are included in another permit. However, the sewage sludge standards at 40 CFR Part 503 are self-implementing which means the permittee is required to comply with them whether or not they have an NPDES permit that includes sewage sludge requirements. Since EPA Region 10 has recently decided to separate waste water and sewage sludge permitting, sewage sludge requirements are not included in this draft permit. EPA will issue a sludge only permit to this facility at a later date.

Until the issuance of a sludge only permit, the facility's sludge activities will continue to be subject to the national sewage sludge standards and any requirements of the State. The Part 503 regulations require that the permittee have a current sewage sludge application on file with EPA.

The draft permit requires the permittee to submit an updated sludge (biosolids) application within 60 days of the effective date of the permit.

D. Sanitary Sewer Overflow

A Sanitary Sewer Overflow (SSO) is an overflow, spill, release, or diversion of wastewater from a sanitary sewer collection system designed to carry only sewage and prior to reaching the treatment plant. Sanitary sewer overflows include a) overflows or releases of wastewater that reach waters of the US b) overflows or releases of wastewater that do not reach waters of the US and c) wastewater backups into buildings that are caused by blockages or flow conditions in a sanitary sewer other than a building lateral. SSOs are generally caused by high volumes of infiltration and inflow (I/I), pipe blockages, pipe breaks, power failure, and insufficient system capacity.

The permittee must report all SSOs that may endanger health or the environment or pose a threat to human safety. Events can be reported orally or electronically as soon as practicable or within 24 hours after the time the permittee becomes aware of the overflow (whichever comes first). The SSO report must identify the location, estimated volume and receiving water, if any, of the overflow. Within five days of the time the permittee becomes aware of the overflow a written report must be submitted to the permitting authority that contains the location of the overflow; the receiving water; an estimate of the volume of the overflow; a description of the sewer system component from which the release occurred (e.g. manhole, constructed overflow pipe, crack in pipe); the estimated date and time when the overflow began and stopped or will be stopped; the cause or suspected cause of the overflow; steps taken or planned to reduce, eliminate, and prevent reoccurrence of the overflow and a schedule of major milestones for those steps; and steps taken or planned to mitigate the impact(s) of the overflow and a schedule of major milestones for those steps.

The permittee shall maintain records of all SSOs that include the location of the SSO and the receiving water (if any); an estimate of the volume of the overflow; a description of the sewer system component from which the release occurred (e.g. manhole, constructed overflow pipe, crack in pipe); the estimated date and time when the overflow began and when it stopped; the cause or suspected cause of the overflow; and steps that have been and will be taken to prevent the overflow from recurring and a schedule for those steps. The permittee shall also maintain records of work orders from the previous 3 years which are associated with investigation of system problems related to SSOs; a list and description of complaints from customers or others from the previous 3 years; and documentation of performance and implementation measures describing the previous 3 years.

VII. OTHER LEGAL REQUIREMENTS

A. State Certification Requirements

Since this permit authorizes the discharge to Alaska State waters, section 401 of the Clean Water Act requires EPA to seek state certification before issuing a final permit. As a result of the certification, the state may require more stringent permit conditions to ensure that the permit complies with state water quality standards.

Based on preliminary comments provided to EPA (dated August 31, 2001), the Alaska Department of Environmental Conservation (ADEC) has tentatively designated a mixing zone for outfall 001 for the protection of aquatic life. The mixing zone for fecal coliform bacteria represents an area 3,200 meters by 200 meters centered around the diffuser and oriented with the tidal flow (ie. the axis formed by 29 degrees NNE and 209 degrees SSW). The water quality standards for fecal coliform (ie. monthly average = 14 organisms per 100 ml and daily maximum = 43 organisms per 100 ml) shall apply outside

the mixing zone. The State has specified that the receiving water shall be monitored for fecal coliform bacteria based on the following schedule:

- ♦ once per month for May, June, July and August
- ♦ once during September to December and
- ♦ once during January to April

According to the preliminary comments, the monitoring of the receiving water may be discontinued after a request from the City of Cordova and written notice from the Department after two years if the results indicate that the discharge is not causing a violation of the state of Alaska water quality standards outside of the mixing zone.

The State has also specified a zone of initial dilution or ZID for a 5 meter radius around the diffuser with a dilution ratio of 100:1. This dilution factor applies to dissolved oxygen, pH, whole effluent toxicity (WET), nutrients, total residual chlorine and metals.

B. Standard Permit Provisions

Parts II, III, and IV of the draft permit contain standard regulatory language that must be included in all NPDES permits. Because they are regulations, they cannot be challenged in the context of an NPDES permit action. The standard regulatory language covers requirements such as monitoring, recording, reporting requirements, compliance responsibilities, and other general requirements.

C. Endangered Species Act of 1973

Section 7 of the Endangered Species Act requires Federal agencies to consult with the National Marine Fisheries Service (NMFS) and the U. S. Fish and Wildlife Service (USFWS) if their actions could beneficially or adversely affect any threatened or endangered species. EPA has determined that the issuance of this permit will not affect any of the threatened or endangered species in the vicinity of the discharge (see Appendix D for further details).

D. Essential Fish Habitat

The Magnuson-Stevens Fishery Conservation and Management Act (January 21, 1999) requires EPA to consult with the National Marine Fisheries Service (NMFS) when a proposed discharge has the potential to adversely affect (reduce quality and/or quantity of) EFH. The EPA has tentatively determined that the issuance of this permit will not affect any EFH species in the vicinity of the discharge, therefore no consultation is required. This fact sheet and the draft permit will be submitted to NMFS for review during the public notice period. Any recommendations received from NMFS regarding EFH will be considered prior to final issuance of this permit (see Appendix E for further details).

E. Coastal Zone Management Act

Pursuant to 40 CFR 122.49(d), requirements of the state coastal zone management program must be satisfied before the permit may be issued. The applicant has certified that the activities authorized by the draft permit are consistent with the Alaska Coastal Management Plan.

F. Permit Expiration

Section 402(1)(B) of the Clean Water Act require that NPDES permits are issued for a period not to exceed five years, therefore, this permit will expire five years from the effective date of the permit.

G. Facility Changes or Alterations. The facility is required to notify EPA of any planned physical alteration or operational change to the facility in accordance with 40 CFR Part 122.41(1). This requirement has been incorporated into the proposed permit to ensure that EPA and ADEC are notified of any potential increases or changes in the amount of pollutants being discharged. This will allow evaluation of the impact of the pollutant loading on the receiving water.

VIII REFERENCES

EPA. 1991. *Technical Support Document for Water Quality-based Toxics Control*. U.S. Environmental Protection Agency, Office of Water, EPA/505/2-90-001, March 1991.

EPA. 1993. *Guidance Manual for Developing Best Management Practices (BMP)*. U.S. Environmental Protection Agency, Office of Water, EPA/833/B-93-004.

EPA. 1996. *U.S. EPA NPDES Permit Writer's Manual*. U.S. Environmental Protection Agency, Office of Water, EPA/833/B-96-003.

AAC. 1997. *Water Quality Standards*. Alaska Department of Environmental Conservation, 18 AAC 70.

IX ACRONYMS

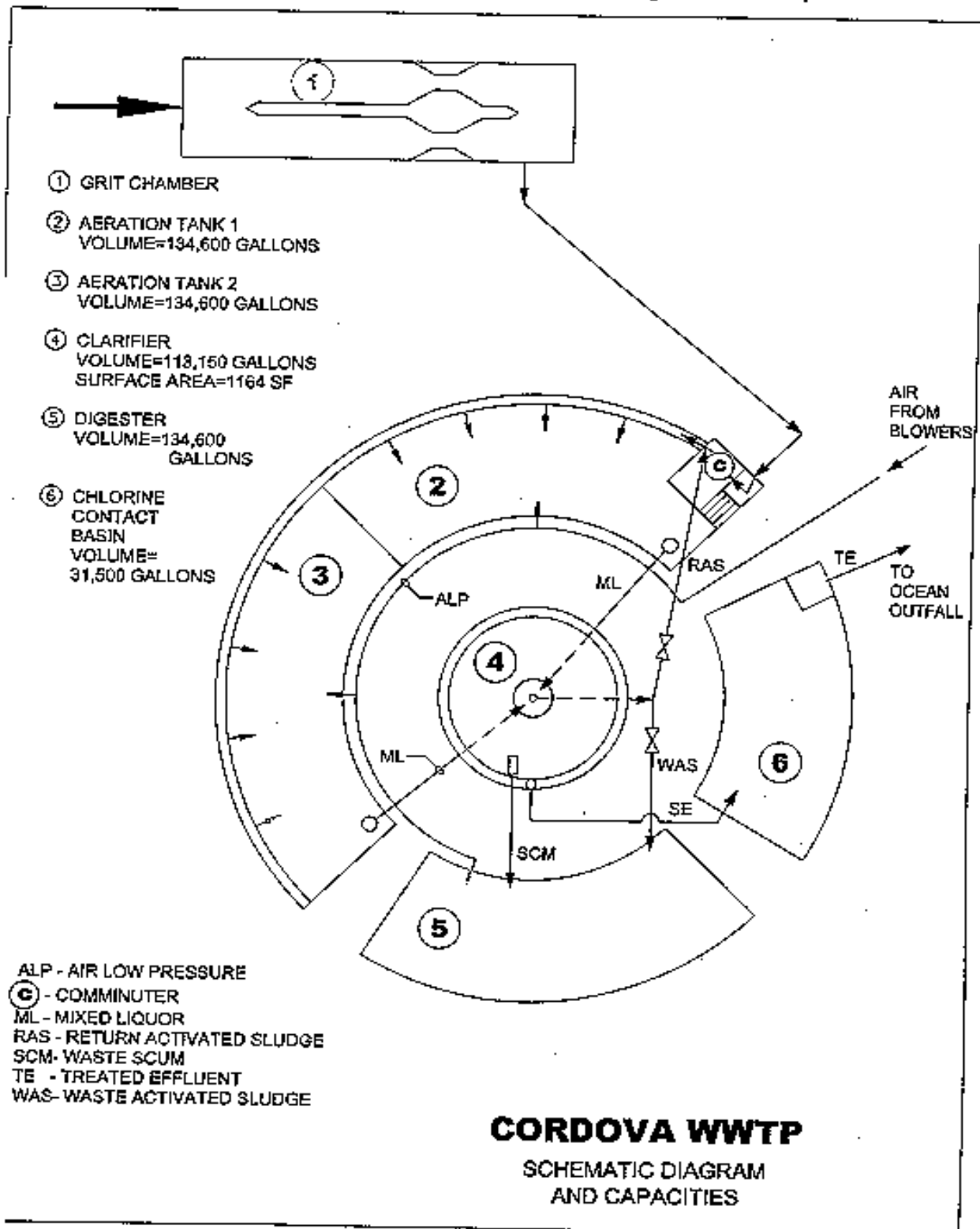
ADEC	Alaska Department of Environmental Conservation
BMPs	Best management practices
BOD	Biochemical oxygen demand
BOD ₅	Biochemical oxygen demand, five-day
°C	Degrees Celsius
CFR	Code of Federal Regulations
CWA	Clean Water Act

DMR	Discharge Monitoring Report
DO	Dissolved oxygen
EFH	Essential Fish Habitat
EPA	U.S. Environmental Protection Agency
ESA	Endangered Species Act
lb	pounds
mg/l	milligrams per liter
ml	milliliter
MSWLF	Municipal solid waste landfill
N	Nitrogen
NMFS	National Marine Fisheries Service
NPDES	National Pollutant Discharge Elimination System
NR	Not required
OW	Office of Water
P	Phosphorus
POTW	Publicly owned treatment works
QAP	Quality assurance plan
sp.	Species
TRC	Total residual chlorine
TSD	Technical Support document (EPA, 1991)
TSS	Total suspended solids
USFWS	U.S. Fish and Wildlife Service
WET	Whole effluent toxicity
WQBEL	Water quality-based effluent limit
WWTP	Wastewater treatment plant

APPENDIX A

Waste Water Treatment Plant Location and Process Flow Diagram

Figure 3 - Cordova WWTP - Schematic Diagram and Capacities



APPENDIX B

Anti-Degradation Policy

The state of Alaska has adopted an anti-degradation policy as part of their water quality standard (18 AAC 70.015). The anti-degradation policy maintains and protects various levels of water quality and uses. It is the state's anti-degradation policy that:

1. existing water uses and the level of water quality necessary to protect existing uses must be maintained and protected;
2. if the quality of water exceeds levels necessary to support propagation of fish, shellfish, and wildlife and recreation in and on the water, that quality must be maintained and protected unless the department, in its discretion, upon application, and after compliance with (b) of this section, allows the reduction of water quality for a short-term variance under 18 AAC 40.200, a zone of deposit under 18 AAC 70.201, a mixing zone under 18 AAC 70.240, or another purpose as authorized in a department permit, certification, or other approval; the department will authorize a reduction in water quality only after the applicant submits evidence in support of the application and the department finds that
 - a. allowing lower water quality is necessary to accommodate important economic or social development in the area where the water is located;
 - b. except as allowed under this subsection, reducing water quality will not violate the applicable criteria of 18 AAC 70.020 or 18 AAC 70.235 or the whole effluent toxicity limit in 18 AAC 70.030;
 - c. the resulting water quality will be adequate to fully protect existing uses of the water;
 - d. the methods of pollution prevention, control, and treatment found by the department to be the most effective and reasonable will be applied to all wastes and other substances to be discharged; and
 - e. all wastes and other substances discharged will be treated and controlled to achieve
 - i. for new and existing point sources, the highest statutory and regulatory requirements; and
 - ii. for nonpoint sources, all cost-effective and reasonable best management practices;
3. if a high quality water constitutes an outstanding national resource, such as a water of a national or state park or wildlife refuge or a water of exceptional recreational or ecological significance, the quality of that water must be maintained and protected; and
4. if potential water quality impairment associated with a thermal discharge is involved, the antidegradation policy described in this section is subject to 33 U.S.C. 1326 (commonly known as sec. 316 or the Clean Water Act).

APPENDIX C

Basis for Effluent Limitations

A. Evaluation of Effluent Limitations

1. Biochemical Oxygen Demand, five-day (BOD₅) and Total Suspended Solids (TSS)

The City of Cordova WWTP is a secondary treatment facility that is subject to the federal technology-based requirements at 40 CFR 133.102 for BOD₅ and TSS. These requirements specify that the monthly average shall not exceed 30 mg/l, the weekly average shall not exceed 45 mg/l, and the monthly average percent removal shall not be less than 85 percent. Daily limits for BOD₅ and TSS are based on the state regulations 18 AAC 72.990 relating to wastewater disposal. In addition, federal regulations 40 CFR §122.45(f) require that NPDES permits must also express the effluent limits in terms of mass-based limits based on the design flow of the facility. Therefore, the limitations are incorporated into the draft permit as both concentration limits and loading limits. The loadings are determined by multiplying the appropriate concentration in mg/l by the design flow in mgd and a conversion factor of 8.34 (to convert from mg/l to lb/day). The loading limitations are calculated as follows:

Monthly average BOD₅ and TSS load = (0.7 mgd) x (30 mg/l) x 8.34 = 175 lbs/day

Weekly average BOD₅ and TSS load = (0.7 mgd) x (45 mg/l) x 8.34 = 263 lbs/day

Maximum daily BOD₅ and TSS load = (0.7 mgd) x (60 mg/l) x 8.34 = 350 lbs/day

The draft permit proposes the following effluent limits:

Effluent Parameter	Unit of Measurement	Monthly Average	Weekly Average	Maximum Daily
Biochemical Oxygen Demand (BOD ₅) ¹	mg/l	30	45	60
	lbs/day	175	263	350
Total Suspended Solids (TSS) ¹	mg/l	30	45	60
	lbs/day	175	263	350
¹ Monthly average percent removal shall ≥ 85%.				

2. Hydrogen ion concentration (pH)

The technology-based limitation, based on federal regulations (40 CFR Part 133.102) is 6.0 to 9.0 standard units. The most stringent Alaska water quality standards specify an allowable pH range of 6.5 to 8.5 standard units.

Based on preliminary comments from the State (dated August 31, 2001), the draft permit proposes a pH limit of 6.0 to 9.0 standard units.

3. Fecal Coliform Bacteria

Fecal coliform is a non-pathogenic indicator species whose presence suggests the likelihood that pathogenic bacteria are present. Alaska water quality standards for

harvesting of raw mollusks or other aquatic life for consumption are the most stringent criteria that would apply at the edge of the mixing zone. This criteria specifies that the fecal coliform bacteria concentration shall not exceed 14 FC/100 ml based on a 5-tube decimal dilution test, and not more than 10% of the samples shall exceed a fecal coliform bacteria concentration of 43 FC/100 ml.

The Alaska Department of Environmental Conservation has taken this standard into consideration in the development of the mixing zone for this facility specified in the State's August 31, 2001 preliminary comments to EPA. In 1995, the State modeled the fate and transport of this pollutant parameter and determined a maximum daily limit of 10,000 organisms per 100 ml.

The draft permit proposes a maximum daily limit for fecal coliform bacteria of 10,000 organisms per 100 ml.

4. Total Residual Chlorine (TRC)

The most stringent State water quality criteria for total residual chlorine to protect the designated uses of the receiving water requires that concentrations shall not exceed 0.002 mg/l. Since April 1997, the city of Cordova has ceased using chlorine to disinfect the wastewater. In preliminary comments provided to EPA, the State designated a zone of initial dilution (ZID) for a 5 meter radius around the diffuser with a dilution ratio of 100:1.

In determining whether water quality-based limits are needed and developing those limits when necessary, EPA uses the approach outlined below:

1. Determine the appropriate water quality criteria
2. Determine whether there is "reasonable potential" to exceed the criteria
3. If there is "reasonable potential", then develop a waste load allocation (WLA)
4. Develop effluent limitations based on WLAs

To determine if there is a "reasonable potential" to cause or contribute to an exceedance of water quality criteria, EPA compares the applicable water quality criteria to the maximum expected receiving water concentrations. If the expected receiving water concentration exceeds the criteria, then there is a "reasonable potential" and a water quality-based effluent limit must be included in the permit. EPA used the recommendations in Chapter 3 of the *Technical Support Document for Water Quality-based Toxics Control* (TSD) (EPA, 1991) to conduct the "reasonable potential" analysis for the City of Cordova wastewater treatment plant.

The maximum expected receiving water concentration is determined using the following mass balance equation:

$$C_r = \frac{C_e}{D} + C_b$$

where,

C_r = receiving water concentration at the edge of the zone of initial dilution (ZID)

C_e = maximum projected effluent concentration

= maximum reported effluent concentration \times reasonable potential multiplier

C_b = background concentration

D = dilution factor (100:1 for total residual TRC)

The maximum projected effluent concentration (C_e) is represented by the highest reported concentration measured in the effluent multiplied by a reasonable potential multiplier.

The reasonable potential multiplier accounts for uncertainty in the data. The multiplier decreases as the number of data points increases and variability of the data decreases.

Variability is measured by the coefficient of variation (CV) of the data. When there is not enough data to reliably determine a CV, the TSD recommends using 0.6 as a default value. A partial listing of reasonable potential multipliers can be found in Table 3-1 of the TSD.

The resulting maximum projected effluent concentration is then divided by the minimum critical dilution. This product represents the maximum effluent concentration at the edge of the zone of initial dilution (ZID). The maximum effluent concentration at the edge of the ZID is then added to the background concentration, C_b . The sum, C_r , represents the projected maximum receiving water concentration at the edge of the ZID. This concentration is compared to the water quality criterion to determine whether a water-quality based effluent limitation is needed. If C_r exceeds the water quality criteria, then a water-quality based effluent limitation is developed.

The following table shows the values used in the “reasonable potential” analysis.

Parameter	Background (C_b)	Max. Effluent Value	Reasonable Potential Multiplier	Dilution Ratio	Receiving Water Concentration (C_r)	Water Quality Criteria
Total Residual Chlorine (TRC)	0	0.32	1.52	100:1	0.005	0.002

The projected chlorine concentrations at the edge of the mixing zone in the receiving water (ie. Orca Inlet) are greater than the criterion. Therefore, there is reasonable potential for the discharge from the wastewater treatment plant to cause an exceedance of the numeric criterion for chlorine.

The maximum daily limit for total residual chlorine can be calculated by rearranging the above equation to the following:

$$C_e = (C_r - C_b) \times D$$

where,

C_r = the criterion in the receiving water at the edge of the zone of initial dilution (ZID)

C_e = maximum daily limit

C_b = background concentration

D = dilution factor (100:1 for total residual TRC)

The following table shows the values used to determine the maximum daily limit for total residual chlorine.

Parameter	Receiving Water Concentration (C_r)	Background (C_b)	Dilution Ratio	Maximum Daily Limit (mg/l)
Total Residual Chlorine (TRC)	0.002	0	100:1	0.2

The draft permit proposes a maximum daily limit of 0.2 mg/l for total residual chlorine.

5. Dissolved Oxygen (DO)

The Alaska water quality standards require the surface DO concentration in coastal water to be greater than or equal to 6.0 mg/l for a depth of one meter except when natural conditions cause this value to be depressed. Furthermore, DO concentrations may not be reduced below 4 mg/l at any point beneath the surface and may not exceed 17 mg/l in any case or 110% of saturation at any point of sample collection.

Based on the State's preliminary comments received by EPA, the draft permit proposes a daily minimum effluent limit of 2.0 mg/l for dissolved oxygen.

6. Total Ammonia

The state of Alaska recently adopted EPA's ammonia criteria for saltwater which is dependent upon salinity, pH and temperature. The draft permit does not propose any effluent limitations for total ammonia due to the lack of historical effluent and receiving water data which are necessary to determine if there is a reasonable potential for applicable water quality criteria to be exceeded. The draft permit does propose monitoring requirements for total ammonia, salinity, temperature and pH to assist in the evaluation of future effluent limitations (see Part V. *Monitoring Requirements* for more details).

7. Residues

The Alaska water quality standards require surface waters of the state to be free from floating solids, debris, sludge, deposits, foam, scum, or other residues of any kind in

concentrations causing nuisance, objectionable, or detrimental conditions or that make the water unfit or unsafe for the use.

The draft permit proposes that the facility meet a narrative standard for floating solids, visible foam, and oily wastes.

8. Sediment

The Alaska water quality standards for sediments require that the concentration of settleable solids in the receiving water may not increase above natural conditions, the loading may not interfere with water supply treatment levels, and may not pose hazards to incidental human contact. Since this is a secondary treatment plant and there is ample mixing in the receiving water, the secondary treatment standards for TSS should fulfill this requirement.

9. Whole Effluent Toxicity (WET)

WET tests are laboratory tests that use small vertebrate and invertebrate species or plants to measure the toxicity of an effluent. Federal regulations at 122.44(d)(1) require whole effluent data and criteria when characterizing effluents. The WET approach measures the aggregate effect of all toxicants in the effluent.

The state of Alaska water quality criteria for whole effluent toxicity requires that the chronic criterion of 1.0 TU_c be met at the point of discharge or at the edge of the mixing zone, if one is granted. Reasonable potential analyses using previous test results and the mixing zone specified in the State's August 31, 2001 preliminary comments were conducted to determine if the discharge would cause or contribute to an exceedance in the water quality standard (see above for a general description of the approach).

The following table shows the values used in the "reasonable potential" analysis.

Parameter	Background (C _b)	Max. Effluent Value	Reasonable Potential Multiplier	Dilution Ratio	Receiving Water Concentration (C _r)	Water Quality Criteria
Chronic Toxicity (TU _c)	0	2.43	4.7	100:1	0.11	1.0

The draft permit does not propose any effluent limitations for chronic toxicity because there is no reasonable potential for the discharge to cause an exceedance of the applicable water quality criteria.

APPENDIX D

ENDANGERED SPECIES ACT

The following are responses to EPA's request (dated December 28, 2000) for a listing of threatened or endangered species in the vicinity of the City of Cordova WWTP:

- ♦ In a letter dated February 2, 2001, the US Fish and Wildlife Service (USFWS) did not identify any federally listed or proposed species and/or designated or proposed critical habitat within the area of the proposed discharge.
- ♦ In a letter dated January 16, 2001, the National Marine Fisheries Service (NMFS) identified several marine mammals that may occur in the water near Cordova including the northern Steller sea lion, California sea lion, harbor seal, Dall's porpoise, harbor porpoise, minke whale and orca. Of these, only the northern Steller sea lion would be expected to occur in the immediate vicinity of the Cordova wastewater treatment plant. Although northern Steller sea lions may forage and transit Orca Inlet during peak salmon returns, there are no listed rookeries or major haulout sites located near Cordova. Therefore, EPA believes that none of the listed species should be adversely impacted by the discharge.

APPENDIX E

ESSENTIAL FISH HABITAT

Essential fish habitat (EFH) is the waters and substrate (sediments, etc.) necessary for fish to spawn, breed, feed, or grow to maturity. The Magnuson-Stevens Fishery Conservation and Management Act (January 21, 1999) requires EPA to consult with the National Marine Fisheries Service (NMFS) when a proposed discharge has the potential to adversely affect (reduce quality and/or quantity of) EFH. The EPA has tentatively determined that the issuance of this permit will not affect any EFH species in the vicinity of the discharge, therefore no consultation is required. This fact sheet and the draft permit will be submitted to NMFS for review during the public notice period. Any recommendations received from NMFS regarding EFH will be considered prior to final issuance of this permit.

The NMFS has requested that EFH assessments contain the following requirements:

1. **List EFH species in the facility area.** In a letter dated January 16, 2001, the NMFS recommended the following websites for specific EFH information relating to the project area:
 - <http://www.fakr.noaa.gov/habitat/> and
 - <http://www.fakr.noaa.gov/arcims/>.

The Habitat Assessment Reports stated the Orca Inlet has been designated to support the following species for EFH: Weathervane scallops, Walleye pollock, Pacific cod, Flathead sole, yellowfin sole, rock sole, Arrowtooth flounder, sculpin spp., skates spp. and Pink, Chum, Sockeye, Chinook and Coho salmon.

2. **Describe the facility and discharge location.** The facility activities and wastewater sources are described in Part II.A and B of this Fact Sheet, and the discharge location is described in Part III.A.
3. **Evaluate potential effects to EFH.** The EPA has tentatively determined that the issuance of this permit will not affect any EFH species in the vicinity of the discharge for the following reasons:
 - a. The proposed permit has been developed in accordance with the Alaska water quality standards to protect aquatic life species in the Orca Inlet. NPDES permits are established to protect water quality in accordance with State water quality standards. The standards are developed to protect the designated uses of the waterbody, including growth and propagation of aquatic life and wildlife. Self-monitoring conducted by the applicant indicates that the facility will be able to comply with all limits of the proposed permit.
 - b. The derivation of permit limits and monitoring requirements (refer to Appendix C of this fact sheet for specifics pertaining to the proposed permit) for an NPDES discharger include the basic elements of ecological risk analysis as specified in the TSD (EPA, 1991). This analysis includes, but is not limited to, the following: effluent characterization, pollutants of concern identification, threshold concentration determination, exposure considerations, dilution modeling and analysis, multiple

sources and natural background consideration, fate and transport variability, and monitoring duration and frequency.

